

**Palaeoenvironmental Sampling and  
Assessment at St Giles' and St Georges'  
CoE Academy, Newcastle-under-Lyme,  
Staffordshire**



**ARS Ltd Report 2016/46**

March 2016

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Archaeological Research  
Services Ltd

**Palaeoenvironmental Sampling and Assessment at St Giles' and St Georges' CoE Academy, Newcastle-under-Lyme, Staffordshire**

**Archaeological Research Services Ltd Report 2016/46**

March 2016



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Prepared on behalf of: Entrust  
Date of compilation: March 2016  
Compiled by: Elise McLellan  
Checked by: Clive Waddington MCIfA  
Local Authority: Staffordshire County Council

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## **Executive Summary**

*Project Name: St Giles' and St Georges' CoE Academy, Newcastle-under-Lyme, Staffordshire*

*Site Code: SGG16*

*Planning Authority: Staffordshire County Council*

*Planning Reference: N.15/07*

*Superficial Geology: Alluvial clay, silt, sand and gravel*

*NGR: SJ 84375 45858*

*Date of Fieldwork: March 30<sup>th</sup> 2016*

*Date of Report: April 2016*

*In March 2016 Archaeological Research Services Ltd. (ARS Ltd) was commissioned by Entrust to undertake a series of three boreholes and assessment of palaeoenvironmental potential in order to fulfil pre-commencement conditions of the planning permission (REF: N.15/07) for an extension to St Giles' and St Georges' CoE Academy, Newcastle-under-Lyme, Staffordshire.*

*Three boreholes were sampled from within the boundary of the planned extension to target an area of previously identified clay and peat deposits. These deposits were identified within the previous extent of the pool which surrounded the medieval castle in Newcastle-under-Lyme. The castle pool is thought to form part of a designed landscape, and may have been used for industrial activities which may be identified through palaeoenvironmental analysis such as retting activities. Palaeoenvironmental analysis may also provide evidence concerning local land-use, agricultural and pastoral activities and vegetation history beginning with the creation of the castle pool in the 12<sup>th</sup> century.*

*Two of the three boreholes successfully reached the target depth of 5m. Due to loss from poor soil retention in the lower samples, a full sample of clay deposits was only recovered from borehole 1 (BH1). Samples were taken from the clay deposits in BH1 to assess their suitability for pollen analysis. No preserved botanical macrofossils were observed in any of the recovered deposits.*

*Pollen was well preserved in all tested clay deposits. However no material was recovered which would permit the dating of these deposits.*

## **1. Introduction**

1.1 This report describes the results of palaeoenvironmental sampling and assessment undertaken at St Giles' and St Georges' CoE Academy, Newcastle-under-Lyme, Staffordshire in fulfilment of a pre-commencement condition of the planning permission (REF: N.15/07) for a building extension. Archaeological Research Services Ltd. (ARS Ltd) was commissioned by Entrust to undertake a series of boreholes and an assessment of the palaeoenvironmental potential of the recovered deposits. Borehole coring was carried out on the 30<sup>th</sup> March 2016 by Elise McLellan of ARS Ltd.

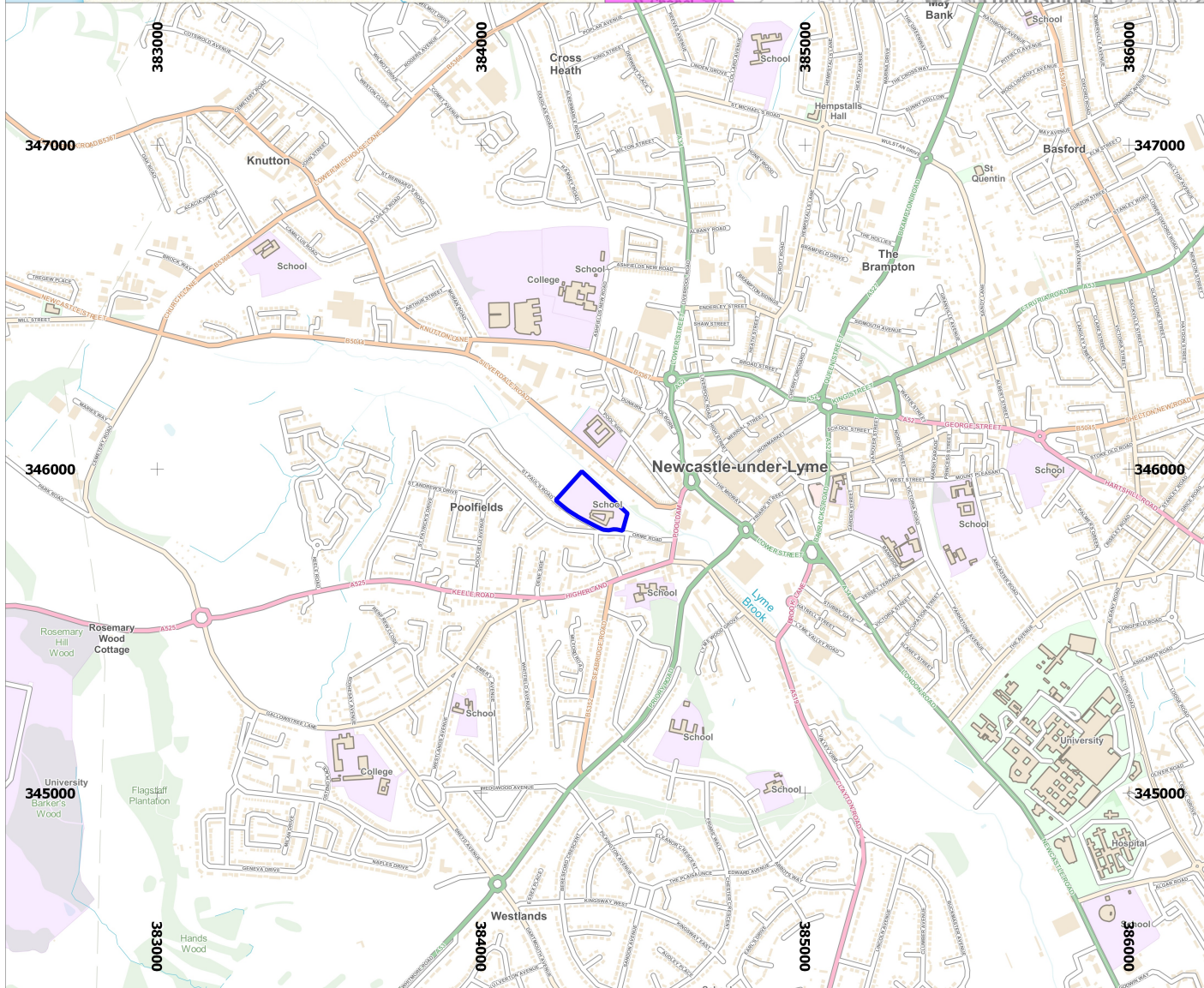
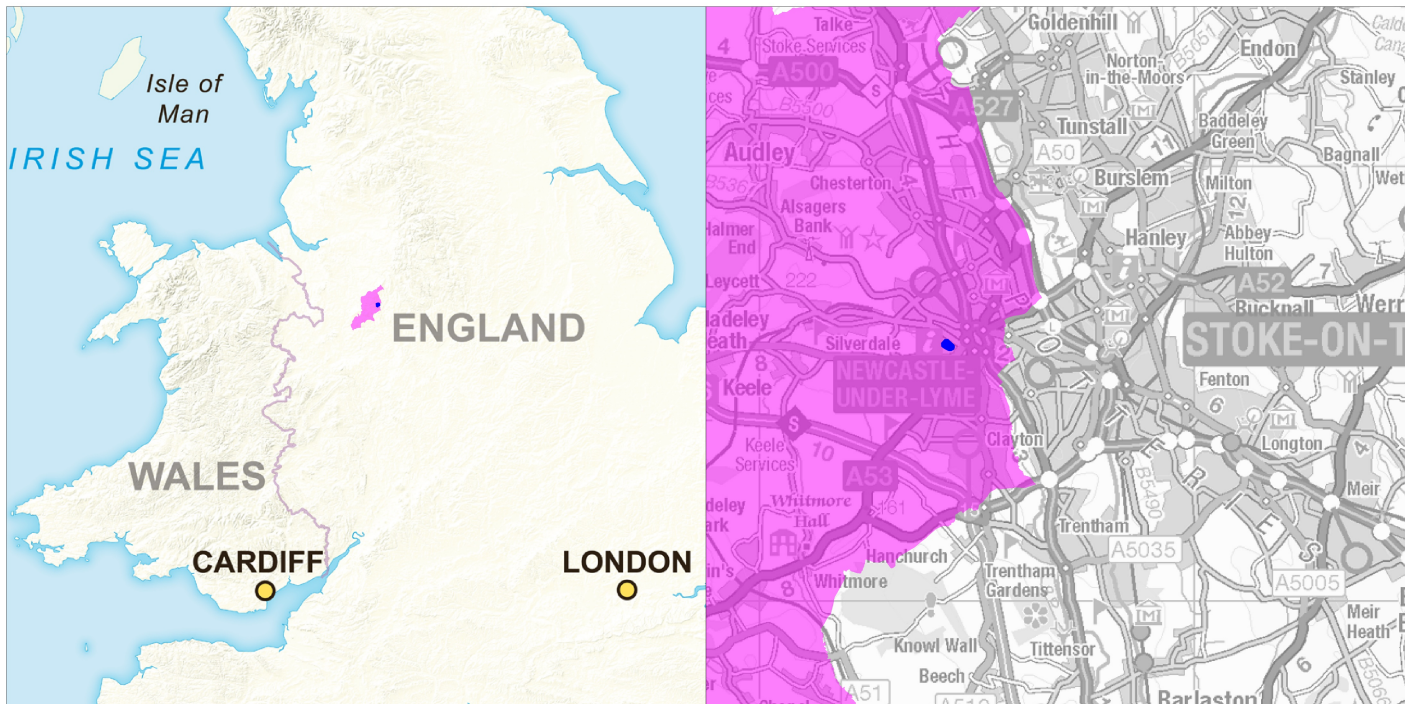
1.2 The area of the proposed development is centred at NGR SJ84375 45858 (Figure 1). The underlying solid geology beneath the proposed western extension to the school comprises mudstone, siltstone and sandstone of the Halesowen Formation, overlain by a superficial deposit of alluvial clay, silt, sand and gravel dating to the Flandrian period (BGS 2016).

1.3 This programme of work is, in line with the National Planning Policy Framework (NPPF) paragraph 141 (CLG 2012), to record and enhance understanding of the significance of any heritage assets to be lost during the proposed development in a manner proportionate to their importance, and to make this evidence (and any archive generated) publically accessible via the Online Access to the Index of Archaeological Investigations (OASIS) as well as the local authority Historic Environment Record (HER).

## **2. Archaeological and Historical Background**

2.1 The proposed development lies within the known extent of a pool associated with the "new castle" constructed during the 12<sup>th</sup> century. The scheduled remains of the motte and bailey castle are located directly north-east of the proposed development. The Lyme Brook was dammed, also during the 12<sup>th</sup> century, to form a pool surrounding the castle. The castle pool remained intact until the sale of the castle in 1828 and subsequent infilling of a portion of the castle pool. The area of the pool within the proposed development area remained undrained until the construction of a railway in 1849-50 (Langley 2012, 31; 33).

2.2 A scheme of test pits and percussion boreholes was undertaken by Ground Investigation and Piling Ltd within the proposed development area in order to assess prevailing ground conditions with respect to foundation design. These percussion boreholes identified alluvial silt and clay deposits with the potential for preserved palaeoenvironmental material.



Site name: St. Giles' and St. George's CoE Academy  
 Date: March 2016  
 Drawn by: AB  
 Scale: Varies

Newcastle-under-Lyme District  
 School boundary

This drawing: © ARS Ltd  
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**Figure 1:**  
**Site location**



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### **3. Methodology**

#### *Geoarchaeological Boreholes*

3.1 Two prospective borehole locations (BH1 and BH2) were identified (Figure 2), with an additional prospective location (BH3) should ground conditions prevent the successful recovery of deposits from the first two locations. The location of BH1 was moved slightly to accommodate for the presence of trees in the proposed sampling location. Boreholes were recovered using a window sampling rig in 1m segments to a depth of 5m. All coring points were then surveyed using a GPS with an accuracy of  $\pm 0.01\text{m}$ . Borehole cores were cleaned, described and subsequently stored at 4°C.

#### *Palaeoenvironmental Assessment*

3.2 All cores were examined for preserved botanical macrofossils, of which none were identified. As BH1 provided the most complete deposit sequence, four  $1\text{cm}^3$  samples were taken from the alluvial deposits of BH1 to determine the presence of preserved pollen (sampling locations and a full sediment log are provided in Appendix I). Samples were processed at the University of Aberdeen following standard acetolysis procedures and suspended in silicon oil. Pollen was examined using a high-powered binocular Leica DME microscope at 400x magnification. Pollen was identified with reference to keys and photographs from Moore and Webb (1991) and Faegri and Iversen (1989).

### **4. Results**

#### *Geoarchaeological Boreholes*

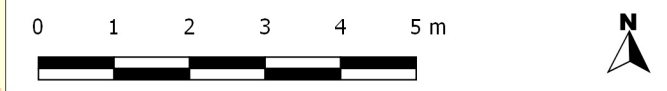
4.1 The window sample cores were frequently unable to retain a full meter of sediment. Retention was consistently lower than 60% in the lower samples where soils were loosely compacted and extremely wet. A full 5m sequence was not successfully retrieved from borehole 2 (BH2) due to extremely wet ground conditions. Two 5m sequences were recovered from BH1 and BH3, although they were also prone to poor retention at lower depths.

4.2 A similar stratigraphy was recorded in all boreholes (Figure 3), a detailed description of which may be found in Appendix I. Turf and topsoil were underlain by loosely compacted sandy made ground with frequent inclusions of gravel, brick and modern glass and white-ware. Beneath the made ground was a thick layer of dark grey brown alluvial silty clays with black mottled organic staining indicating a potential for preserved pollen. Despite descriptions of pockets of peat in previous geotechnical boreholes, no peat or other botanical macrofossils were observed in any of the sampled sediments. The only organic material observed was in the form of black organic staining of the silty clay deposits. A lighter sandy silt was observed in BH1 underlying the dark grey brown alluvial silty clays.



**Figure 2: Borehole Locations**

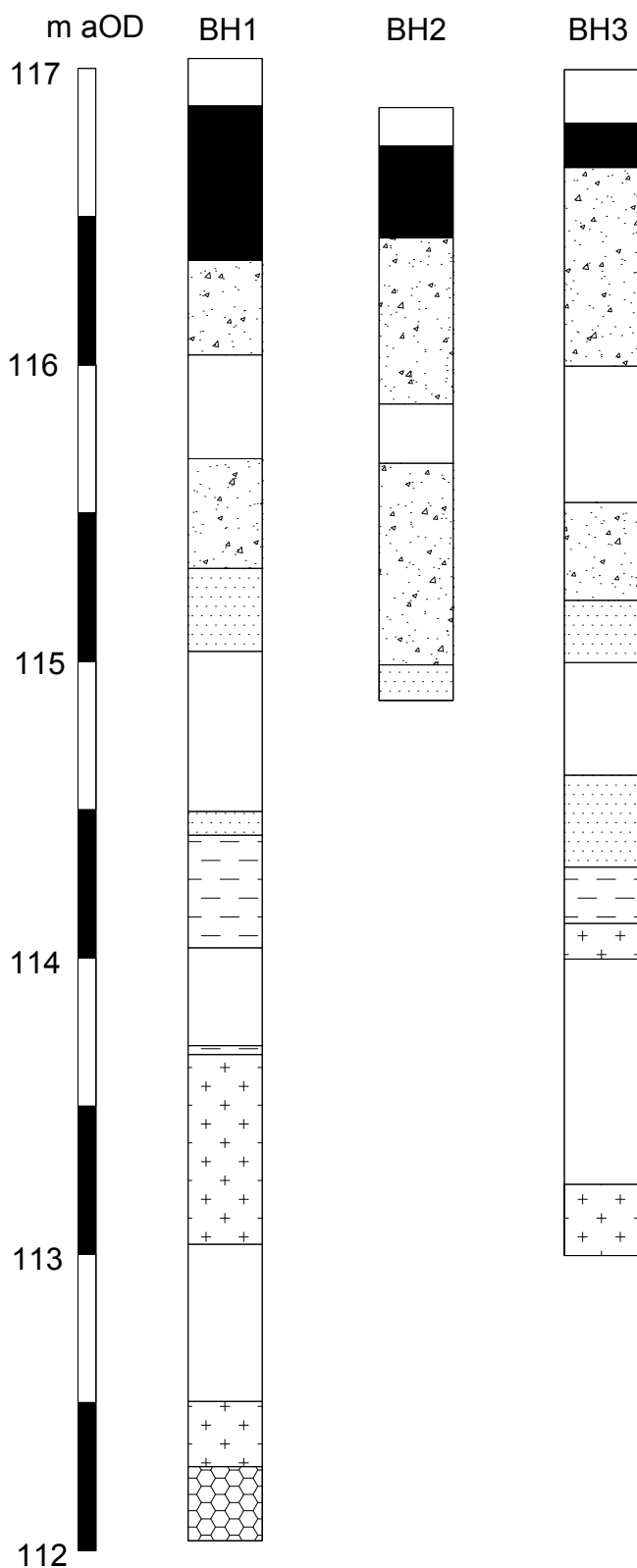
- ◆ Original Borehole Locations
- ◆ Actual Borehole Locations



<p>St. Giles and St. Georges, Newcastle-under-Lyme          Date: April 2016          Drawn by: MB          Scale: 1:100 @ A4</p>	<p><b>Archaeological Research Services Ltd</b>          Angel House          Portland Square          Bakewell          Derbyshire          DE45 1HB          Tel: 01629 814540          Fax: 01629 814657          www.archaeologicalresearchservices.com</p>
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**Key:**







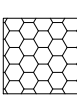
-  Void
-  Unit 1. Topsoil
-  Unit 2. Made Ground
-  Unit 3. Silty Clay with Manganese Flecks
-  Unit 4. Homogenous Silty Clay
-  Unit 5. Silty Clay with Organic Staining
-  Unit 6. Olive Brown Sand

Figure 3: Geotechnical Boreholes  
Scale: 1:25

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4.3 Borehole 1 (BH1) provided the most continuous sample, as well as the only sample that securely reached the base of the alluvial silty clay deposits. BH1 was therefore selected to assess the potential for preserved pollen. Four samples were selected from the clay deposits of BH1 and sent for processing. Samples were inspected to confirm the presence and condition of preserved pollen. Well-preserved pollen was successfully identified in all four samples, suggesting the potential for pollen analysis.

4.4 Preliminary examination of the preserved pollen indicated the presence of mixed woodland consisting primarily of oak and elm. The upper two samples indicate the possible presence of forest clearance or management with an increased presence of smaller succession species, mainly hazel and birch. Alder pollen was present in all samples, and may have been growing locally on the borders of the moat and tributary stream. Cereal-type pollen was identified in all four samples, attesting to the presence of cereal agriculture. Herbaceous species indicative of open meadow and grassland were also present in all four samples, including species indicative of grazing activities.

## **5. Discussion and Conclusions**

5.1 Results from geotechnical boreholes indicate the presence of clay deposits consistent with the presence of a castle pool within the development area. These deposits are roughly 3m in depth, poor core retention preventing the determination of exact heights, and become increasingly organic towards the base of the clays.

5.2 Pollen was successfully identified in the lower clay deposits, units 4 and 5 (see Appendix I). Pollen was abundant and well preserved, and would be suitable for further analysis. Species identified include deciduous woodland (oak, birch and hazel), along with open meadow grasses and herbs. Material suitable for radiocarbon dating was not recovered, therefore any pollen profile produced by further analysis would be undated. It may be possible to identify the mid-19<sup>th</sup> century upper boundary of the profile through the presence of spheroidal carbonaceous particles (SCPs) present at the onset of widespread use of fossil fuels; however the lower portion of the profile corresponding to medieval use of the castle and pool would remain undated.

5.3 The recovered deposits indicate a gradual silting up of the castle pool during the medieval and post-medieval period, followed by a period of infilling during the construction of the railway in 1849-1850. The base of the sediment sequence contains several metres of largely homogenous silty clay indicative of a gradual silting up of the castle pool. A higher organic content in the lowest deposits is likely attributable to the greater depth of the pool creating anoxic conditions at the base of the pool. As the silty clay deposits accumulated, the pool was no longer deep enough to limit the presence of oxygen and therefore the upper silty clays are largely inorganic. Historic mapping dating to 1798 (Figure 4) records the continued presence of a pool in the area of the site at that time.



Figure 4. W Yates' "An Improved Map of the County of Stafford, 1798" depicting the presence of a pool in the vicinity of the development area (blue outline).

5.4 There is an abrupt stratigraphic shift marking the deliberate infilling of the remaining pool during the construction of the railway in 1849-1850. An average depth of c.1.3m of dark grey sandy made ground material was deposited, completely infilling the remaining pool. This infilled material contained large amounts of bottle glass and white ware, confirming its 19<sup>th</sup> century origin.

## **6. Publicity, Confidentiality and Copyright**

6.1. Any publicity will be handled by the client. Archaeological Research Services Ltd (ARS Ltd) will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

## **7. Archive Deposition**

7.1. A digital and paper archive will be prepared by Archaeological Research Services Ltd, consisting of all primary written documents, photographs and electronic data, and it is due to be submitted to the Staffordshire County Council (SCC).

7.2. A copy of the report will be uploaded as part of the OASIS record.

## **8. Statement of Indemnity**

8.1. All statements and opinions contained within this report arising from the works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

## **9. Acknowledgements**

9.1. Archaeological Research Services Ltd. would like to thank all those involved with this study, including Stephen Dean the Principle Archaeologist for the Staffordshire County Council, and the staff of St Giles' and St Georges' CoE Academy for providing site access and assistance.

## **10. References**

British Geological Survey. 2016. Geology of Britain viewer. Available online at: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> [Accessed 4th April 2016].

Faegri, K., Iversen, J. 1989. Textbook of Pollen Analysis, revised by Faegri K, Kaland PE, Krzywinski K. *J Wiley, New York*.

Langley, D. 2012. Newcastle-under-Lyme Historic Character Assessment. Staffordshire Extensive Urban Survey report. Stafford, Staffordshire County Council

Moore, PD, Webb, JA, & Collinson, ME. 1991. Pollen Analysis, London.

**APPENDIX I – Borehole Descriptions  
(all unit thickness in cm in far left column)**

<b>Borehole 1 (BH1) Top height 117.04m aOD</b>			
<b>Unit thickness (cm)</b>	<b>Description</b>	<b>Depth (m aOD)</b>	<b>Pollen Sample Locations (m aOD)</b>
<b>Length 1 (0-1m)</b>			
0-16	VOID	117.04 – 116.88	
16-68	Black (5YR 2.5/1) organic silty turf and topsoil. Gradual lower contact. <b>(UNIT 1)</b> .	116.88 – 116.36	
68-100	Very dark grey (7.5YR 3/1), loosely compacted sandy made ground. Abundant inclusions of gravel and brick, frequent inclusions of modern bottle glass and white ware. <b>(UNIT 2)</b> .	116.36 – 116.04	
<b>Length 2 (1-2m)</b>			
0-35	VOID	116.04 – 115.69	
35-72	Very dark grey (7.5YR 3/1), loosely compacted sandy made ground. Abundant inclusions of gravel and brick, frequent inclusions of modern bottle glass and white ware. Sharp lower contact. <b>(UNIT 2)</b> .	115.69 – 115.32	
72-100	Very dark grey (10YR 3/1) stiff silty clay. Flecked black manganese precipitation, otherwise very homogenous and largely inorganic. <b>(UNIT 3)</b> .	115.32 – 115.04	
<b>Length 3 (2-3m)</b>			
0-54	VOID	115.04 – 114.50	
54-62	Very dark grey (10YR 3/1) stiff silty clay. Flecked black manganese precipitation, otherwise very homogenous and largely inorganic. Gradual lower contact. <b>(UNIT 3)</b> .	114.50 – 114.42	
62-100	Dark brown (7.5YR 3/3) loose silty clay. Homogenous and largely inorganic. <b>(UNIT 4)</b> .	114.42 – 114.04	P @ 114.39 P @ 114.19
<b>Length 4 (3-4m)</b>			
0-33	VOID	114.04 – 113.71	
33-36	Dark brown (7.5YR 3/3) loose silty clay. Homogenous and largely inorganic. Amorphous with gradational lower contact. <b>(UNIT 4)</b> .	113.71 – 113.68	
36-100	Dark brown (7.5YR 3/3) silty clay, mottled with amorphous black organic staining. No botanical	113.68 – 113.04	P @ 113.49 P @ 113.09

	macrofossils observed. Otherwise homogenous and structureless. <b>(UNIT 5)</b> .		
<b>Length 5 (4-5m)</b>			
0-53	VOID	113.04 – 112.51	
53-75	Dark brown (7.5YR 3/3) silty clay, mottled with amorphous black organic staining. No botanical macrofossils observed. Otherwise homogenous and structureless. Sharp planar basal contact. <b>(UNIT 5)</b> .	112.51 – 112.29	
75-100	Olive brown (2.5Y 4/3) stiff sand with clast supported gravel. <b>(UNIT 6)</b> .	112.29 – 112.04	
<b>End of Borehole</b>			

<b>Borehole 2 (BH2) Top height 116.87m aOD</b>			
<b>Unit thickness (cm)</b>	<b>Description</b>	<b>Depth (m aOD)</b>	<b>Sample depth from surface (m)</b>
<b>Length 1 (0-1m)</b>			
0-13	VOID	116.87 – 116.74	
13-44	Black (5YR 2.5/1) organic silty turf and topsoil. Gradual lower contact. <b>(UNIT 1)</b> .	116.74 – 116.43	
44-100	Very dark grey (7.5YR 3/1), loosely compacted sandy made ground. Abundant inclusions of gravel and brick, frequent inclusions of modern bottle glass and white ware. <b>(UNIT 2)</b> .	116.43 – 115.87	
<b>Length 2 (1-2m)</b>			
0-20	VOID	115.87 – 115.67	
20-88	Very dark grey (7.5YR 3/1), loosely compacted sandy made ground. Abundant inclusions of gravel and brick, frequent inclusions of modern bottle glass and white ware. Sharp lower contact. <b>(UNIT 2)</b> .	115.67 – 114.99	
88-100	Very dark grey (10YR 3/1) stiff silty clay. Flecked black manganese precipitation, otherwise very homogenous and largely inorganic. <b>(UNIT 3)</b> .	114.99 – 114.87	
<b>Length 3 (2-3m)</b>			
NO RETENTION			
<b>Length 4 (3-4m)</b>			
NO RETENTION			
<b>End of Borehole</b>			

<b>Borehole 3 (BH3) Top height 116.99m aOD</b>			
<b>Unit thickness (cm)</b>	<b>Description</b>	<b>Depth (m aOD)</b>	<b>Sample Locations (m aOD)</b>
<b>Length 1 (0-1m)</b>			
0-18	VOID	116.99 – 116.81	
18-33	Black (5YR 2.5/1) organic silty turf and topsoil. Gradual lower contact. <b>(UNIT 1)</b> .	116.81 – 116.66	
33-100	Very dark grey (7.5YR 3/1), loosely compacted sandy made ground. Abundant inclusions of gravel and brick, frequent inclusions of modern bottle glass and white ware. <b>(UNIT 2)</b> .	116.66 – 115.99	
<b>Length 2 (1-2m)</b>			
0-46	VOID	115.99 – 115.53	
46-79	Very dark grey (7.5YR 3/1), loosely compacted sandy made ground. Abundant inclusions of gravel and brick, frequent inclusions of modern bottle glass and white ware. Sharp lower contact. <b>(UNIT 2)</b> .	115.53 – 115.20	
79-100	Very dark grey (10YR 3/1) stiff silty clay. Flecked black manganese precipitation, otherwise very homogenous and largely inorganic. <b>(UNIT 3)</b> .	115.20 – 114.99	
<b>Length 3 (2-3m)</b>			
0-38	VOID	114.99 – 114.61	
38-69	Very dark grey (10YR 3/1) stiff silty clay. Flecked black manganese precipitation, otherwise very homogenous and largely inorganic. Gradual lower contact. <b>(UNIT 3)</b> .	114.61 – 114.30	
69-88	Dark brown (7.5YR 3/3) loose silty clay. Homogenous and largely inorganic. Gradational lower contact. <b>(UNIT 4)</b> .	114.30 – 114.11	
88-100	Dark brown (7.5YR 3/3) silty clay, mottled with amorphous black organic staining. No botanical macrofossils observed. Otherwise homogenous and structureless. <b>(UNIT 5)</b> .	114.11 – 113.99	
<b>Length 4 (3-4m)</b>			
0-76	VOID	113.99 – 113.23	
76-100	Dark brown (7.5YR 3/3) silty clay, mottled with amorphous black organic staining. No botanical macrofossils observed. Otherwise homogenous and structureless. <b>(UNIT 5)</b> .	113.23 – 112.99	
<b>Length 5 (4-5m)</b>			
NO RETENTION			
<b>End of Borehole</b>			

## **St. Giles' and St. George's CoE Academy, Newcastle-under Lyme, Staffordshire**

### **Written Scheme of Investigation for Palaeo-environmental Sampling**

2016



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Prepared on behalf of: Entrust

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Date of compilation: March 2016

Site central NGR: SJ 84375 45858



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## 1 INTRODUCTION

### 1.1 Planning Background

1.1.1 This scheme of works relates to a planning application (Ref. N.15/07) for the proposed construction of two extensions at St Giles and St George's School located off St Paul's Road/Orme Road in Newcastle under Lyme in Staffordshire (Figure 1).

1.1.2 Pre-application consultation with Staffordshire County Council's (SCC)'s Principal Archaeologist solicited the following response:

*A pre-commencement condition is required for an archaeological evaluation due to demonstrable archaeological potential from within the site and the surrounding area. The results of this evaluation will inform the need for and scope of any subsequent archaeological mitigation across the site.*

*The proposed scheme sits within the former pool which once surrounded the medieval castle at Newcastle. This pool is now considered to have part of a designed and engineered landscape but is also likely to have performed an industrial function. As such there may be evidence for milling, retting and tanning in the area, particularly following the decline and eventual demolition of the castle towards the end of the medieval period. Bearing in mind the presence of a large body of water, there does also remain the potential for extensive palaeoenvironmental and geoarchaeological remains associated with the development of the pool. Such material could contain significant information about the early development of the castle, of Newcastle and the wider landscape particularly during the early-medieval, medieval and post medieval periods. The Newcastle-under-Lyme Extensive Urban Survey places this site into Historic Urban Character Area (HUCA) 1: The Castle and Silverdale Road and considers this to have high evidential (archaeological) potential.*

*Bearing in mind the demonstrable archaeological potential on this site and in the surrounding area, it is advised that a staged archaeological evaluation be undertaken across the site well in advance of groundworks. The results of this evaluation would inform the need for and scope of any subsequent archaeological mitigation (i.e. excavation or watching brief). These works should be undertaken by an appropriately experienced archaeological organisation employing suitably experienced staff. The organisation appointed to undertake the work would comply with the Chartered Institute for Archaeologists (CIfA) Code of Conduct and the CIfA standard and guidance for 'Archaeological evaluations.' (2014) and with any Brief prepared by the SCC Historic Environment Team. This approach is supported by NPPF para 128, while any archaeological mitigation which stems from the evaluation are supported by NPPF 141. This work may be satisfactorily secured via a condition attached to any planning permission for the scheme. This condition should read:*



*'Prior to the commencement of the development hereby permitted, a written scheme of archaeological investigation ('the Scheme') shall be submitted for the written approval of the Local Planning Authority. The Scheme shall provide details of the programme of archaeological works to be carried out within the site, including post-excavation reporting and appropriate publication and interpretation. The Scheme shall thereafter be implemented in full in accordance with the approved details.'*

*Should the need for further archaeological mitigation be identified as a result of the evaluation, these would require the preparation of a separate Written Scheme of Investigation to be approved by the Local Planning Authority.*

*The scheme lies opposite the Scheduled motte of the castle at Newcastle. Where a scheme has the potential to either directly impact a Scheduled Monument or its setting, Scheduled Monument Consent may be required. The Secretary of State is advised in such matters by Historic England. Bearing in mind the significance of this designated heritage asset no doubt the applicant will have consulted with Historic England at an early stage.*

1.1.3 This document comprises a Written Scheme of Investigation (WSI) confirming the nature of the archaeological fieldwork to be undertaken Archaeological Research Services Ltd (ARS Ltd) in accordance with the consultation response reproduced above from SCC's Principal Archaeologist.

## **1.2 Site Location and Geology**

1.2.1 The site is located in the centre of the historic core of Newcastle-under-Lyme, centred at SJ 84375 45858.

1.2.2 The underlying solid geology beneath the proposed western extension to the school comprises *Mudstone, Siltstone and Sandstone* of the *Halesowen Formation*, and this is overlain by a superficial deposit of *Alluvium - Clay, Silt, Sand and Gravel* dating to the Flandrian period (BGS 2016).

1.2.3 The soils of the school grounds are classified as belonging to the ENBORNE Soil Association (811a), which are typical alluvial gley soils (SSEW 1983b, 5). These soils form over River Alluvium, and are characterised as *'Deep stoneless fine loamy and clayey soils variably affected by groundwater. Flat land. Risk of flooding'* (SSEW 1983b, 18).

## **1.3 Archaeological and Historical Background**

1.3.1 The school grounds are located immediately to the south-west of the Scheduled remains of Newcastle's motte and bailey castle (NHLE no. 1020853), thought to have been constructed as a 'new castle' by the earls of Chester in the 12<sup>th</sup> century. By damming the Lyme Brook, a large pool surrounding the castle known as Castle Pool was created, and the castle may have positioned at this location in order



to allow this possibility (Langley 2012, 17). The school grounds are located within the area that formerly formed the Castle Pool

1.3.2 When John Leyland visited the castle in 1541, the castle was in ruins and only one great tower remained, and this was finally destroyed in the early 17th century (Langley 2012, 26). The Duchy of Lancaster sold the castle in 1828 and subsequently 30 acres of the Castle Pool were drained to be reclaimed as meadows and gardens, but the area of the school grounds remained undrained at this time (Langley 2012, 31; 33).

1.3.3 Between 1849-50, a mineral railway was constructed across the former Castle Pool (Langley 2012, 31; 33), requiring the remaining area of the pool to be drained and infilled. The route of the railway forms the north-western boundary to the school grounds, whilst the south-western boundary is formed by the canalised course of the Lyme Brook. Castlehill Foundry was constructed at what is now the western side of the school playing fields in the 19<sup>th</sup> century, but this had been demolished by 1937. This site of the school itself remained as playing fields throughout the 20<sup>th</sup> century until the construction of the school in the early 21<sup>st</sup> century.

## 2 AIMS AND OBJECTIVES

### 2.1 Regional Research Aims and Objectives

2.1.1 The regional research context is provided by *The Archaeology of the West Midlands: A Framework for Research* (Watt (ed.) 2006). The fieldwork has the potential to generate information that could contribute to the following key research aims:

*There is no part of the west midlands region that does not stand to benefit from more work on castle sites, including fairly fundamental work such as mapping, density and distribution on a local and regional basis, alongside determining the extent of individual sites within their landscapes ...*

*Furthermore, castle studies are a particularly strong contender for multidisciplinary approaches, even though this is a position that could be reasonably argued for medieval archaeology as a whole ...*

*The castles of the region also need to be studied within their wider contexts, those of the manor and honour. ... While excavation should form a part of this work, it is clear that such ambitions will only be realised with the deployment of the fullest range of survey and interpretive techniques that are available ... (Hunt 2006, 194-5).*



## 2.2 Project Specific Aims and Objectives

2.2.1 The project specific aim is to undertake a scheme of palaeo-environmental sampling to determine and understand the nature, function, and character of any surviving palaeoenvironmental and archaeological deposits.

2.2.2 The Newcastle-under-Lyme Extensive Urban Survey highlights the evidential value of the Historic Character Type that the school grounds inhabit (HUCA 1 – The Castle and Silverdale Road):

*'There is a high potential for the above and below ground remains associated with the castle to inform the understanding of the town particularly the influence of the castle on its potential earliest location.*

*There is also the potential for paleo-environmental evidence to survive in areas across the extent of the former Castle Pool which could elucidate the local environment around Newcastle' (Langley 2012, 52).*

## 3 GEO-ARCHAEOLOGICAL BOREHOLES

### 3.1 Coverage

3.1.1 It is proposed that two boreholes will be excavated within the footprint of the proposed western extension to the school. The proposed locations for these boreholes (BH1 and BH2) are depicted on Figure 2; these locations have been chosen so as to avoid the stage and seating structures, the extant hardstanding on the western side of the school, and a culvert which is known to run to the north of the outdoor stage. The location of a third contingency borehole (BH3) is also indicated on Figure 2 which can be excavated should the recovery of at BH1 and BH2 be unsatisfactory.

### 3.2 Methodology

3.2.1 This investigation will be achieved by undertaking a borehole survey of the site using window sampling. This will allow the recovery of intact cores (c.10cm diameter), which can be subsequently sampled for plant macrofossils, wood, pollen and radiocarbon dating (and also, if appropriate, invertebrates and diatoms).

3.2.2 A geoarchaeologist will be on-site alongside the drilling team to ensure the quality of recording and sampling of sediments is in line with English Heritage's 'Geoarchaeology' guidelines (English Heritage 2007a).

3.2.3 Organic sediment samples will be taken for assessment purposes from selected cores. Samples will be double bagged in sealed plastic bags and labelled accordingly. The samples will be assessed for their palaeoenvironmental information



potential (such as presence/absence of pollen and plant macrofossils, along with a statement of preservation) by a suitably qualified and experienced specialist.

3.2.4 All coring points will be surveyed using a total station and an accurate plan of the borehole survey produced as part of the report.

### **3.3 Recording**

3.3.1 The site will be accurately tied into the National Grid and located on a 1:2500 or 1:1250 map of the area.

3.3.2 A full and proper record (written, graphic and photographic as appropriate) will be made for all work.

3.3.3 Any archaeological deposits and features will be recorded with above ordnance datum (AOD) levels.

3.3.4 A photographic record will be taken in colour digital format that matches the quality of a 35mm SLR film camera and will include, where appropriate, a clearly visible, graduated metric scale. A register of all photographs will be kept. A selection of photographs will also be taken including working shots to demonstrate how the site was investigated and what the prevailing conditions were like during the borehole survey.

### **3.4 Finds Processing and Storage**

3.4.1 All processing, conservation work and storage of any archaeological finds that are recovered will be carried out in compliance with the ClfA 'Standard and Guidance for the collection, documentation, conservation and research of archaeological materials' (2014a) and the 'Guidelines for the Preparation of Excavation Archives for Long Term Storage' set out by UKIC (1990).

3.4.2 Artefact and ecofact collection and discard policies will be appropriate for the defined purpose.

3.4.3 Bulk finds which are not discarded will be washed and, with the exception of animal bone, marked. Marking and labelling will be indelible and irremovable by abrasion. Bulk finds will be appropriately bagged, boxed and recorded. This process will be carried out no later than two months after the end of the excavation.

3.4.4 Any small finds will be recorded as individual items and appropriately packaged (e.g. lithics in self-sealing plastic bags and ceramic in acid-free tissue paper). Vulnerable objects will be specially packaged and textile, painted glass and coins stored in appropriate specialist systems. This process will be carried out within two days of the small find being excavated. Prehistoric pottery will only be lightly cleaned and will not be subject to any abrasion or loss of adhering residues.



3.4.5 During and after the borehole survey all objects will be stored in appropriate materials and storage conditions to ensure minimal deterioration and loss of information (including controlled storage, correct packaging, and regular monitoring, immediate selection for conservation of vulnerable material). All storage will have appropriate security provision.

3.4.6 The deposition and disposal of artefacts will be agreed with the legal owner and the appropriate Regional Collection Museum prior to the work taking place. All finds except treasure trove are the property of the landowner. Items falling under the 1996 Treasure Act (and subsequent amendments) will be immediately notified to the appropriate Portable Antiquities Scheme officer and/or coroner along with the SCC's Principal Archaeologist.

3.4.7 All retained artefacts and ecofacts will be cleaned and packaged in accordance with the requirements of the recipient museum.

## **4 POST-FIELDWORK ASSESSMENT, REPORT AND ARCHIVE**

### **4.1 Aims and Objectives**

4.1.1 The aims of the post-fieldwork phase of the project are as follows.

- ◆ Produce a concise post-fieldwork assessment strategy
- ◆ Prepare an orderly archive of the records of the fieldwork.
- ◆ Clean, conserve and prepare artefacts/ecofacts for long-term museum storage.
- ◆ Prepare specialist reports as appropriate.
- ◆ Prepare a report describing the archaeological deposits discovered as the site progresses. This means that a single archive report will be produced and this report will be enlarged and added to as subsequent phases of work take place. This means that there will always be a single up-to-date document for the site and it is also a more efficient way of integrating site data and analysing site data as it accumulates and it also avoids repetitious report writing. It will also ensure that the final report will be able to produced quickly after completion of the last phase of work.

### **4.2 Report**

4.2.1 Modelling of the 3d subsurface geology will be undertaken using appropriate software (e.g. Rockworks, Strater) by a trained geoarchaeologist, who will also co-ordinate specialist activities and reporting.



4.2.2 One copy of the report will be submitted to the client, and one bound hard copy and a digital copy in PDF/A format will be submitted to the Staffordshire Historic Environment Record (HER) within fourteen working days of the completion of the report. A report will be produced which will be bound with each page and paragraph numbered and will include as a minimum the following:

- ◆ Non-technical executive summary
- ◆ Introductory statement
- ◆ Aims and purpose of the project
- ◆ Methodology
- ◆ A location plan showing the boreholes with respect to nearby fixed structures and roads
- ◆ Contextualisation/comparison of core stratigraphy with existing deposit model
- ◆ Palaeoenvironmental assessment
- ◆ Statements regarding information potential and significance
- ◆ An objective summary statement of results
- ◆ Conclusions and recommendations for further analysis/site work
- ◆ Supporting data – tabulated or in appendices
- ◆ Index to archive and details of archive location
- ◆ References
- ◆ Statement of intent regarding publication
- ◆ Confirmation of archive transfer arrangements
- ◆ A copy of the WSI and OASIS form.

4.2.3 ARS Ltd will complete an on-line OASIS form for this fieldwork. ARS Ltd is a registered contractor on the OASIS system and has uploaded archaeological reports before. A copy of completed OASIS form should be appended to the back of each report submitted.





## 4.3 Archive

4.3.1 If the project produces archaeologically significant ecofacts, then the SCC Principal Archaeologist and Museum Curator will be notified at the earliest opportunity, and an accession number will be produced for the site. In addition, a digital, paper and artefactual archive will be prepared by ARS Ltd, consisting of all primary written documents, plans, sections, photographs and electronic data (in a format to be agreed by The Potteries Museum and Art Gallery). The archive will be deposited in line with the ClfA (2014b) Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives, Society of Museum Archaeologists (1993) Selection, Retention and Dispersal of Archaeological Collections. Guidelines for use in England, Wales and Northern Ireland and will be deposited within two months of the completion of the report. The SCC Principal Archaeologist and Museum Curator will be notified in writing on completion of the fieldwork with projected dates for the completion of the report and deposition of the archive. The date for deposition of the archive will be confirmed in the report and the SCC Principal Archaeologist informed in writing on final deposition of the archive.

4.3.2 All artefacts and associated material will be cleaned, recorded, properly stored and deposited in the archive.

4.3.3 A full set of annotated, illustrative pictures of the site, excavation, features, layers and selected artefacts will be deposited with the archive as digital images on a CD ROM.

## 5 MONITORING ARRANGEMENTS

5.1.1 Prior notice of the commencement of the ground works to be given to the Staffordshire County Council Principal Archaeologist:

Stephen Dean  
Principal Archaeologist  
Wedgwood Building  
Stafford  
ST16 2DH  
Tel: 01785 277290  
Email: [stephen.dean@staffordshire.gov.uk](mailto:stephen.dean@staffordshire.gov.uk)

5.1.2 ARS Ltd will liaise with the Principal Archaeologist at regular intervals throughout the course of the work.

5.1.3 The client will afford reasonable access to the Principal Archaeologist, or his representative, for the purposes of monitoring the survey.



## 6 GENERAL ITEMS

### 6.1 Health and Safety

6.1.1 All work will be carried out in accordance with The Health and Safety at Work Act 1974. Specific health and safety policies exist for all our workplaces and all staff employed will be made aware of the policy and any relevant issues. The particular risks involved with this project will be assessed, recorded and relevant mitigation measures put in place as part of a full risk assessment, which will be compiled in advance of fieldwork and will be read and signed by all on-site operatives. ARS Ltd retains Peninsula as its expert health and safety consultants.

### 6.2 Insurance Cover

6.2.1 ARS Ltd holds full Employer's Liability (£10 million), Public Liability (£5 million) and Professional Indemnity (£2 million) insurance, which also cover community groups and volunteers working under the supervision of ARS Ltd staff.

### 6.3 Changes to the Written Scheme of Investigation

6.3.1 Changes to the approved methodology or programme of works will only be made with prior written approval of the SCC Principal Archaeologist.

### 6.4 Publication

6.4.1 If significant archaeological remains are recorded, ARS Ltd will submit a short summary report for inclusion in the next edition of the Journal of West Midlands Archaeology within 6 months of the completion of the fieldwork. Additional popular articles will also be produced for local and/or national magazines as appropriate. The final form of the publication is to be agreed with the planning archaeologist and the client dependent on the results of the fieldwork.

## 7 REFERENCES

British Geological Survey 2016. Geology of Britain viewer. Available online at: <http://mapapps.bgs.ac.uk/geologyofbritain/home/html> [Accessed 24th March 2016]. Chartered Institute for Archaeologists (CIfA) 2014a. *Code of Conduct*. Reading, Institute for Archaeologists

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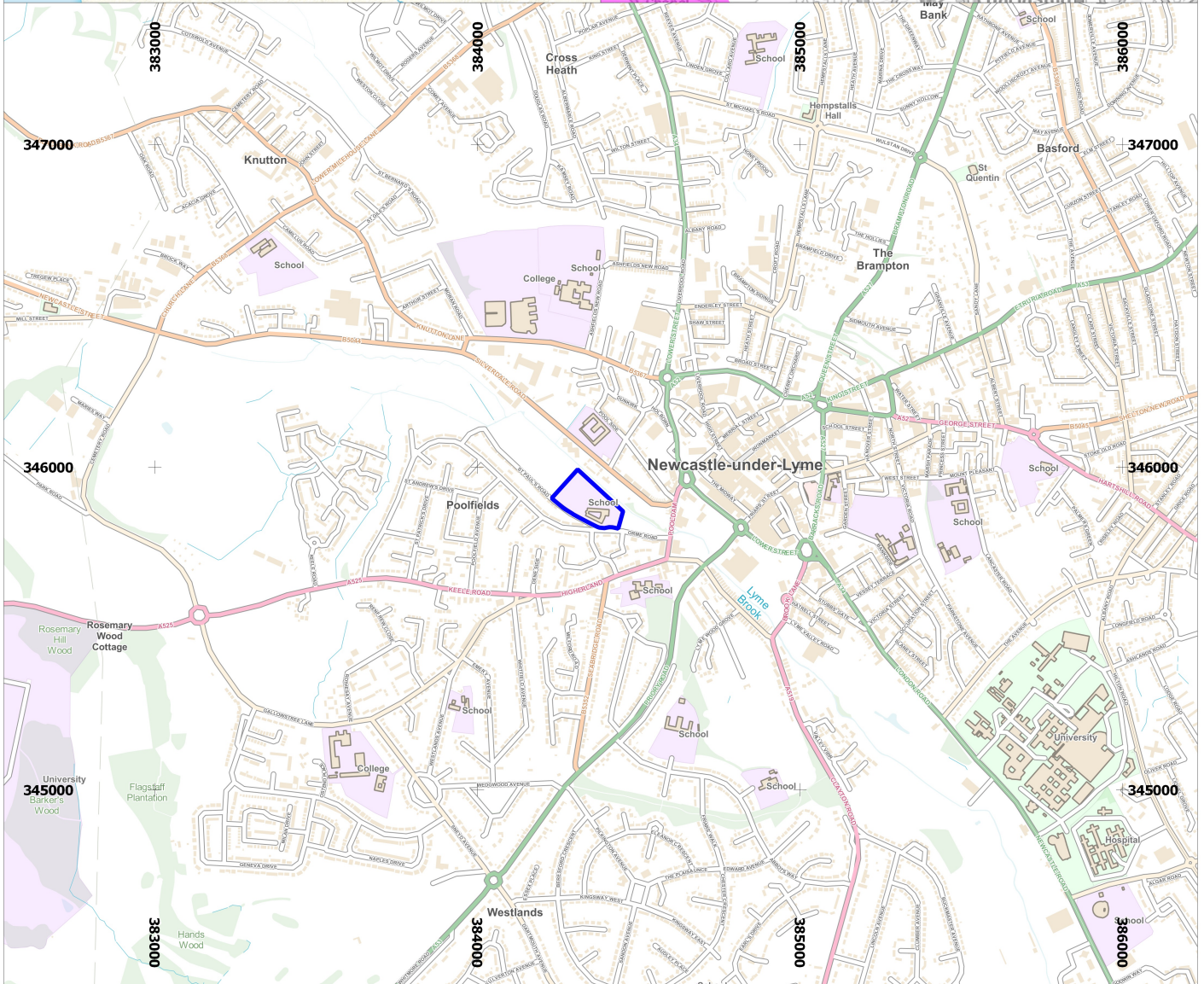
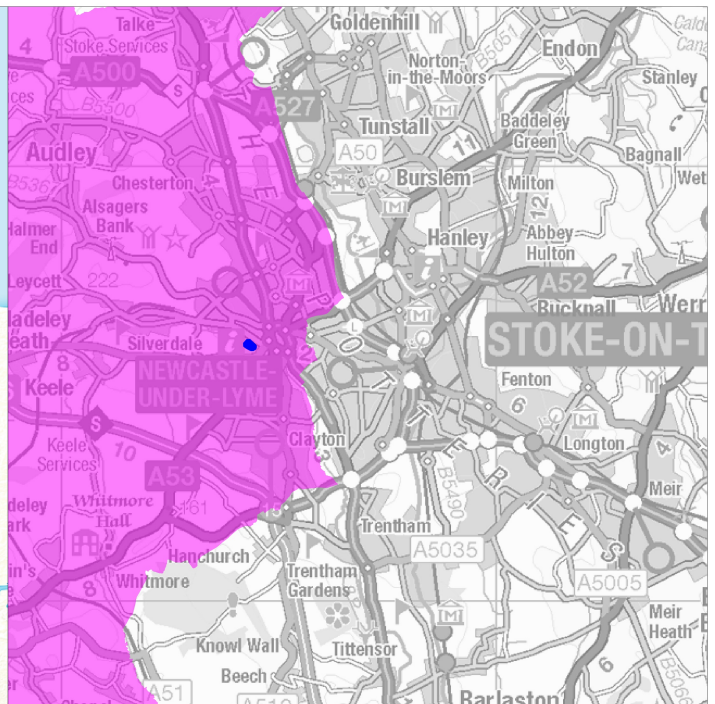


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**APPENDIX 1: FIGURES**





Site name: St. Giles' and St. George'2 CoE Academy  
 Date: March 2016  
 Drawn by: AB  
 Scale: Varies

 Newcastle-under-Lyme District  
 School boundary

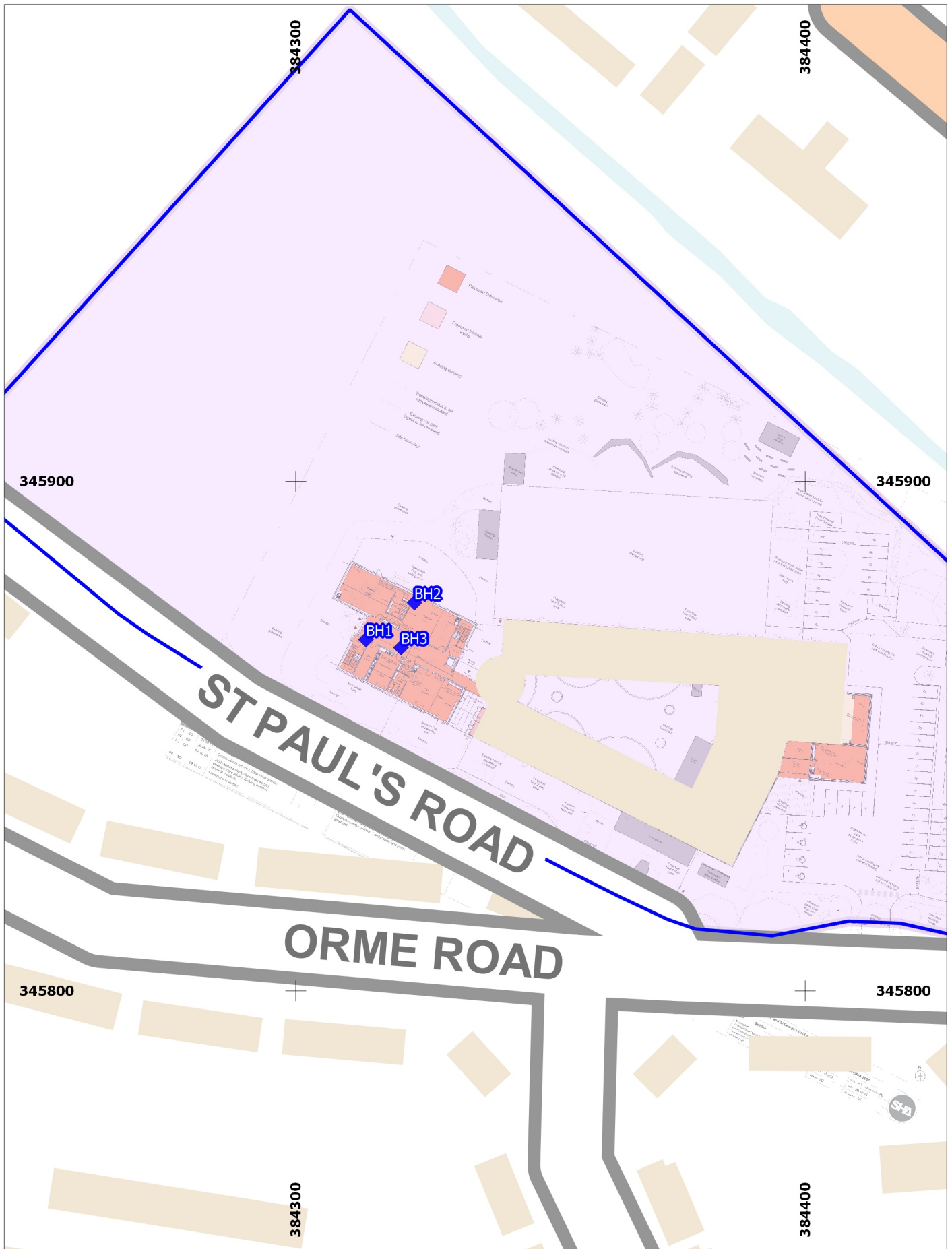


**Archaeological Research Services Ltd**  
 Angel House  
 Portland Square  
 Bakewell  
 Derbyshire  
 DE45 1HB  
 Tel: 01629 814540  
 www.archaeologicalresearchservices.com



**Figure 1:**  
**Site location**

This drawing: © ARS Ltd  
 Contains Ordnance Survey data.  
 © Crown copyright and database right 2015



Site name: St. Giles' and St. George's CoE Academy  
 Date: March 2016  
 Drawn by: AB  
 Scale: 1:1000 @ A4

 Site boundary

 Borehole location



**Archaeological Research Services Ltd**

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 Derbyshire  
 DE45 1HB



Tel: 01629 814540

www.archaeologicalresearchservices.com

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 2015

**Figure 2:**  
**Proposed borehole locations**

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OASIS ID: [archaeo15-249432](#)

## Project details

Project name	Palaeoenvironmental Sampling and Assessment at St Giles' and St Georges' CoE Academy Newcastle-under-Lyme, Staffordshir
Short description of the project	In March 2016 Archaeological Research Services Ltd. (ARS Ltd) was commissioned by Entrust to undertake a series of three boreholes and assessment of palaeoenvironmental potential in order to fulfil pre-commencement conditions of the planning permission (REF: N.15/07) for an extension to St Giles' and St Georges' CoE Academy, Newcastle-under-Lyme, Staffordshire. Three boreholes were sampled from within the boundary of the planned extension to target an area of previously identified clay and peat deposits. These deposits were identified within the previous extent of the pool which surrounded the medieval castle in Newcastle-under-Lyme. The castle pool is thought to form part of a designed landscape, and may have been used for industrial activities which may be identified through palaeoenvironmental analysis such as retting activities. Palaeoenvironmental analysis may also provide evidence concerning local land-use, agricultural and pastoral activities and vegetation history beginning with the creation of the castle pool in the 12th century. Two of the three boreholes successfully reached the target depth of 5m. Due to loss from poor soil retention in the lower samples, a full sample of clay deposits was only recovered from borehole 1 (BH1). Samples were taken from the clay deposits in BH1 to assess their suitability for pollen analysis. No preserved botanical macrofossils were observed in any of the recovered deposits.
Project dates	Start: 30-03-2016 End: 30-03-2016
Previous/future work	No / Not known
Type of project	Field evaluation
Current Land use	Other 2 - In use as a building
Monument type	MOTTE AND BAILEY Medieval
Significant Finds	LACUSTRINE DEPOSIT Uncertain
Methods & techniques	"Environmental Sampling"
Development type	Public building (e.g. school, church, hospital, medical centre, law courts etc.)
Prompt	Planning agreement (Section 106 or 52)
Position in the planning process	Pre-application

## Project location

Country England  
Site location STAFFORDSHIRE NEWCASTLE UNDER LYME NEWCASTLE UNDER LYME St Giles' and St Georges' CoE Academy  
Postcode ST5 2NB  
Study area 0 Square metres  
Site coordinates SJ 84375 45858 53.009496308415 -2.232899116989 53 00 34 N 002 13 58 W Point

## Project creators

Name of Organisation Archaeological Research Services Ltd and English Heritage  
Project brief originator Archaeological Research Services Ltd  
Project design originator Archaeological Research Services Ltd  
Project director/manager Robin Holgate  
Project supervisor Elise McLellan  
  
Entered by Elise McLellan (elise@archaeologicalresearchservices.com)  
Entered on 22 April 2016

# OASIS:

Please e-mail [Historic England](#) for OASIS help and advice

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